MINOS Switching Power Supply Specifications
September 28, 2000

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**Introduction**
This is the specification for switching power supplies which shall power the MINOS 10U subracks. The switching power supplies shall be powered by single phase, 220 VAC 50/60 Hz.. There is to be **11** units containing the high current switching power supplies and **20** units containing the lower current switching power supplies. The parameters and specifications are given below.

**1. Low Noise Multiple Output Voltage Switching Power Supply Assemblies**
Each Power Supply Assembly shall consist of :

1.1 An enclosure for 19" relay rack mounting with a front panel, circuit breaker or fuse holders, power and control connections, and status lights. The entire assembly shall be either 3U high with a depth of no more than 17", or 6U high with a depth of no more than 8".

1.2 Each high current supply output voltage shall have its own supply and return terminals. A common return for the +/- 12 volt supply will be permitted. Output terminals shall be arranged along the back of the supply. The spacing of the terminals shall allow for the easy separation of and connection of cables with appropriate connectors.

1.3 Each pair of supply terminals shall have a corresponding set of sense leads. The supply shall operate normally without sense connection.

1.4 The Power Supply Assembly shall have its own forced air cooling. High reliability fans shall be used. An ambient temperature of 20C is expected and the power supply shall operate without derating to at least 40C.

1.5 Lights on the front panel of the power supply assembly shall locally indicate the status of the AC input and an overall indication of the DC output status. There shall also be some means to locally detect the occurrence of an over temperature condition, and the occurrence of over voltage, under voltage, and over current for each individual output.

1.6 The power supplies shall be assembled, installed and wired in the enclosure of the Power Supply Assembly and tested as a single integrated unit. Each 10U subrack shall be powered from one Switching Power Supply Assembly.

1.7 DC output leads and studs shall be sized for a current value of no greater then 1000 amps per inch of copper.

1.8 The rear of the Power Supply Assembly shall have a protective cover over all terminals, such that no falling object shall cause an accidental short across any power terminal.

1.9 The power supplies shall have the voltages and currents, chosen to meet the requirements listed below, and installed in the enclosure.

1.9.1 The high current power supplies shall provide the following currents and voltages:
V1 = +5 Vdc with at least 115 Amps (575 VA)
V2 = +3.3 Vdc with at least 190 Amps (627 VA)
V3 = +12 Vdc with at least 10 Amps (192 VA)
V4 = -12 Vdc with at least 10 Amps (192 VA)

1.9.2 The low current power supplies shall provide the following currents and voltages:
V1 = +5 Vdc with at least 60 Amps (288 VA)
V2 = +3.3 Vdc with at least 95 Amps (314 VA)
V3 = +12 Vdc with at least 10 Amps (120 VA)
V4 = -12 Vdc with at least 10 Amps (120 VA)

**2. Power Supply Input Specifications**

| | |
|---|---|
| Input Voltage | Single phase, 220 VAC, 50-60 Hz |
| Fuse Rating | 20 Amps |
| Power Factor | 0.95 or better at 220 VAC |
| Inrush Current | < 40 Amps peak max @ 230 VAC |
| Conducted /Radiated EMI | EN55022 Level B, CISPR 22, FCC B |

**3. Power Supply Output Specification**
The outputs shall be as specified in Section 1.9 above. Each output shall meet the following specifications.

| | | |
|---|---|---|
| Line/Load Regulation | < 25mV | +/- 100% load, |
| Dynamic Response | < 100mV | +/- 25% load change |
| Recovery Time | Within +/- 1% in < 300 usec | +/- 25% load change |
| Noise and Ripple | < 10 mV peak-peak | 0 - 20 MHz |
| Efficiency | 75% or greater | |
| Overcurrent Protection | 30% to 100% of rated value (adjustable) | |
| Over voltage Protection | 125% of nominal | |

Output power modules designed for parallel operation shall have full current share capability without increase in ripple or noise. The power supply output voltages shall all be independent of each others load. The power supply shall comply with noise specifications at full load and down to at least 10% load without degradation in performance.

**4. Environmental and Safety Specifications**
The power supplies shall have the following safety approvals

UL 1950
CSA 22.2 - 950
EN 60950

Shall bear the CE Mark.

| | |
|---|---|
| Operating Temperature | 0 to 50 degC |
| Over temperature Protection | Every module protected against over temperature |
| Mean Time Between Failures | > 100,000 h, 25 degC ambient operation |